



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

Mitsuo SHIBUTANI

Group Art Unit: 1713

Serial Number: 10/769,039

Examiner: WU, IVES

Filed: January 30, 2004

For: DISPERSING AGENT COMPRISING VINYL ALCOHOL POLYMER
HAVING CONJUGATED DOUBLE BONDS IN ITS MOLECULE

DECLARATION UNDER 37 CFR 1.132

Honorable Commissioner

Washington, D.C. 20231

Sir,

Mitsuo SHIBUTANI, citizen of Japan, duly deposes and says:

1. That he has graduated from Department of Industrial Chemistry, Faculty of Engineering, Toyama University, Toyama, Japan, in the year of 1985, and he received the degree of Master of Engineering from Toyama University Graduated School, Toyama;

2. That he was employed in his capacity since 1987 by The Nippon Synthetic Chemical Industry Co., Ltd.;

3. That he has been engaged in research and development of modified polyvinyl alcohol, and he is a manager of Advanced Product Laboratory in Central Research Laboratory;

4. That he has read and is familiar with the instant application for United States Letters Patent and the Office Action thereto mailed June 5, 2006;

5. That he experimented and proved that Comparative Example 1 of USSN 10/769,039 was carried out in the following EXPERIMENTAL and obtained the results shown in Tables 3 and 4 of USSN 10/769,039.

EXPERIMENTAL

[Preparation of polyvinyl alcohol resin-based dispersing agent]

A polymerization reactor was charged with 100 parts by weight of vinyl acetate, 1.2 parts by weight of acetaldehyde, 4.7 parts by weight of methanol and 0.0092 % by weight of, based on vinyl acetate, acetyl peroxide (APO). After replacement with nitrogen gas, the reactor was heated, and the polymerization was started at boiling temperature and terminated about 5.7 hours later when the polymerization conversion reached 91.8 % by weight. Unreacted vinyl acetate was then removed, and to the obtained reaction mixture (40 % by weight methanol solution of polyvinyl acetate) was added a methanol solution of 4.7 millimoles of sodium hydroxide per mole of vinyl acetate unit. The hydrolysis was carried out at 35°C for 2 hours in a usual manner to give a slurry (resin concentration 12 % by weight) of a PVA resin (degree of polymerization 770, degree of hydrolysis 71.1 % by mole, content of carbonyl group 0.16 % by mole).

[Heat treatment]

To the thus prepared PVA resin was added 210 g of magnesium acetate tetrahydrate per kg of the PVA resin in the form of a 10 % by weight methanol solution. After stirring the mixture at 25 °C for 1 hour, it was filtered by a Nutsche and dried to give the PVA

resin containing 0.75 % by mole of magnesium acetate. The obtained PVA resin in the form of powder was fed to a heat-treatment vessel and dried therein at 110 °C for 2 hours in a nitrogen atmosphere. While keeping the oxygen concentration at 10 % by introducing a mixed gas of nitrogen and air (nitrogen: air = 1:1 by volume) into the vessel at a rate of 100 liter/hour, the heat treatment was conducted at 150 °C for 5 hours to give a PVA resin of Comparative Example 1.

With respect to the PVA resin, the evaluations described in Example 1 of USSN 10/769,039 were conducted.

RESULTS

The results are shown in the following as in Tables 3 and 4 of USSN 10/769,039.

Absorbance of dispersing agent

215 nm: 0.598

280 nm: 0.572

320 nm: 0.505

A₃₂₀/A₂₈₀ ratio: 0.88

Block character: 0.47

Solubility: ×

State of fouling buildup: ×

Amount of foamy polymer: 0.42 % by weight

Bulk density: 0.47

Fish eye

Evaluation A

3 min.: 220

5 min.: 28

7 min.: 3

Evaluation B

3 min.: 82

5 min.: 12

7 min.: 2

The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

This 23rd day of August, 2006

by Mitsuo Shibutani

Mitsuo SHIBUTANI

We, the undersigned witnesses, hereby acknowledge that Mitsuo SHIBUTANI is personally known to us and did execute the foregoing Declaration in our presence on:

Date: August 24, 2006 Witness Yoshiaki Hirai

Date: August 24, 2006 Witness MinaRo Kajitani